DOCUMENT RESUME

ED 477 067 IR 021 795

AUTHOR	McNaught, Carmel
TITLE	Implementing Technology in Higher Education: The Management of Multiple Dimensions.
PUB DATE	2002-06-00
NOTE	7p.; In: ED-MEDIA 2002 World Conference on Educational Multimedia, Hypermedia & Telecommunications. Proceedings (14th, Denver, Colorado, June 24-29, 2002); see IR 021 687.
AVAILABLE FROM	Association for the Advancement of Computing in Education (AACE), P.O. Box 3728, Norfolk, VA 23514. Tel: 757-623-7588; e-mail: info@aace.org; Web site: http://www.aace.org/DL/.
PUB TYPE	Reports - Evaluative (142) -- Speeches/Meeting Papers (150)
EDRS PRICE	EDRS Price MF01/PC01 Plus Postage.
DESCRIPTORS	Educational Change; Educational Development; *Educational Policy; *Educational Practices; *Educational Technology; Foreign Countries; Higher Education; Information Technology; *Technology Integration
IDENTIFIERS	Australia

ABSTRACT

The paper explores the environment of intense change that characterizes most Australian universities (and indeed universities in much of the world). In this environment, universities have had to reassess their fundamental business and the way they go about it. Information Technology (IT) is viewed as an important factor in streamlining their operations and all universities are investing heavily in systems and services. If this implementation is not managed in a collegial way there is a very real danger that academic teachers will resent the changes being made and undermine the investment. Polarity theory is described and a model is developed which shows that the "zone of effective change" in universities requires that several dimensions need to be managed at the same time. Examples of these dimensions are: top down versus bottom up decision making; management versus scholarship; systems versus services; central versus devolved; focus versus variety; mass change versus growing individuals; and competition versus collaboration. It is argued (with examples) that changing "versus" to "and" allows a new perspective to be added to university implementation of policies and practice. (Contains 16 references, 1 table, and 2 figures.) (Author)

Reproductions supplied by EDRS are the best that can be made
from the original document.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

G.H. Marks

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

Implementing Technology in Higher Education: The Management of Multiple Dimensions

Carmel McNaught
Centre for Learning Enhancement And Research
Chinese University of Hong Kong
carmel.mcnaught@cuhk.edu.hk

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

Minor changes have been made to improve reproduction quality.

Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

ED 477 067

Abstract:

The paper will explore the environment of intense change that characterises most Australian universities (and indeed universities in much of the world). In this environment, universities have had to reassess their fundamental business and the way they go about it. Information Technology (IT) is viewed as an important factor in streamlining their operations and all universities are investing heavily in systems and services. If this implementation is not managed in a collegial way there is a very real danger that academic teachers will resent the changes being made and undermine the investment. Polarity theory will be described and a model will be developed which shows that the 'zone of effective change' in universities requires that several dimensions need to be managed at the same time. Examples of these dimensions are:

- top down *versus* bottom up decision making
- management *versus* scholarship
- systems *versus* services
- central *versus* devolved
- focus *versus* variety
- mass change *versus* growing individuals
- competition *versus* collaboration

It will be argued (with examples) that changing '*versus*' to '*and*' allows a new perspective to be added to university implementation of policies and practice.

The Changing Terrain of Higher Education

This paper is based on two sets of experiences; the first is the ongoing experience of working in academic staff development in three large Australian universities over the last ten years, and the second is directing a recent national study about the uptake of technology for teaching and learning across the Australian higher education sector.

Universities are currently in an environment of intense change. They are being required to educate more students, from an increasing variety of backgrounds, with decreasing government funding. Universities are required to compete vigorously for student enrolments and external sources of funding. In this environment, universities have had to reassess their fundamental business and the way they go about it. Information Technology (IT) is viewed as an important factor in streamlining their operations and all universities are investing heavily in systems and services. The implementation of technology covers aspects like IT infrastructure (networks, standards, hardware, etc.); online learning management systems (such as WebCT or Blackboard); academic management systems (e.g. PeopleSoft) which may be fully integrated with the learning management systems and financial systems; digital library investments; and extensive staff development.

Yetton et al. (1997) make it clear that communication and information technologies will be a major part of future university planning. Yetton's research team examined 20 universities' management of IT. They noted that an organisation's performance is a function of fit among five factors: strategy, roles and skills, management processes, structure and technology. They noted the need to change terms and conditions of employment in universities and the need for rationalisation. "There will be winners and losers" (p. xiii). In this paper I will discuss a few ideas about how universities might manage internal policy development and their approaches to collaborative ventures in order maximise their chances of being 'winners'.

IR021795

BEST COPY AVAILABLE

Innovation and Change

We should not underestimate the difficulties involved in innovation and change. Marris (1986) parallels the sense of loss during bereavement to the resistance one can feel when letting go of known ways of doing things and embarking on new strategies. For many academics the increasing emphasis on the use of computer technology for administration, research and teaching is highly threatening. We need to recognise these fears and devise plans that build staff confidence and motivation, and provide adequate support and training opportunities. Changing educational practices and styles can produce many negative reactions and this negativity needs to be acknowledged and managed effectively. Change should be introduced and implemented within a supportive environment. The culture of the organisation needs to be able to embrace change while offering staff opportunities to manage their own levels of comfort with the change.

Conventional texts on management often define organizations as groups of people united by a common goal, but our common experience (and our common sense) would tell us that organizations are only rarely so united and so rational. Ford et al. (1996) acknowledge the complexity of modern universities and provide descriptions of various perspectives of people who work in and with higher education. However, some of the passion and trauma of change seems to have been sanitised out of this book and others like it. The authors operate on an evolutionary approach—"the principle that diversity and change are forces to be managed and harnessed rather than resisted" (p. 2). The strength of individual innovation seems stifled, and yet such innovation is one catalyst for change.

It is important to consider how innovation leads change, and how inappropriate management strategies can either stifle the innovation or cause a long time delay between the innovators developing and evaluating their work, and the results moving into other areas of the organisation.

Argyris (1991) discusses how relatively simple models of problem-solving such as action learning do not go far enough because they focus on "identifying and correcting errors in the external environment" (p. 99). He suggests that the way problems are perceived and defined needs attention as well.

Senge (1990) argues that the modern organisation needs not only knowledge at all operational levels, but also the capacity to learn. His model of a 'learning organisation' draws on the work of Argyris and Schon (1978) on single and double loop learning; single loop learning is simple problem solving; double loop learning looks at fundamental organisational structure and embeds individuals' discoveries, inventions and evaluations in organisational memory (Argyris & Schon, 1978, p. 19). For Senge, teams are the learning agents that can achieve double loop learning and translate individual work into new theories of action for the organisation. This, at least, is closer to what my experience of effective change has been. Senge suggests a range of strategies—personal mastery, building mental models and shared visions, and forming learning teams.

Polarity Theory

Instead of thinking of a range of problems, issues or options that needs to be considered during the implementation of an innovation, Johnson (1992) suggests that it is more realistic to consider a series of polarities. He claims that polarities are sets of opposites which can't function well independently. Because the two sides of a polarity are interdependent, it is not possible to choose one as a solution and neglect the other. The aim of polarity management is to get the best of both opposites while avoiding the limits of each. The solution resides within the tension between polarities. For example, we can view collaboration and competition as being at two poles; they are not mutually exclusive, but rather both need to be accommodated in our strategic planning. Polarity theory does not offer defined solutions to organisational problems. It emphasises that change is a messy and dynamic situation; as the appropriate balance point for one set of polarities shifts, this will influence others. Fig. 1 shows a series of polarities, intersecting in what I have called the 'zone of effective change'. I will make a few comments on and/or provide illustrations for each of these polarities in turn; no priority is indicated by the order of discussion.

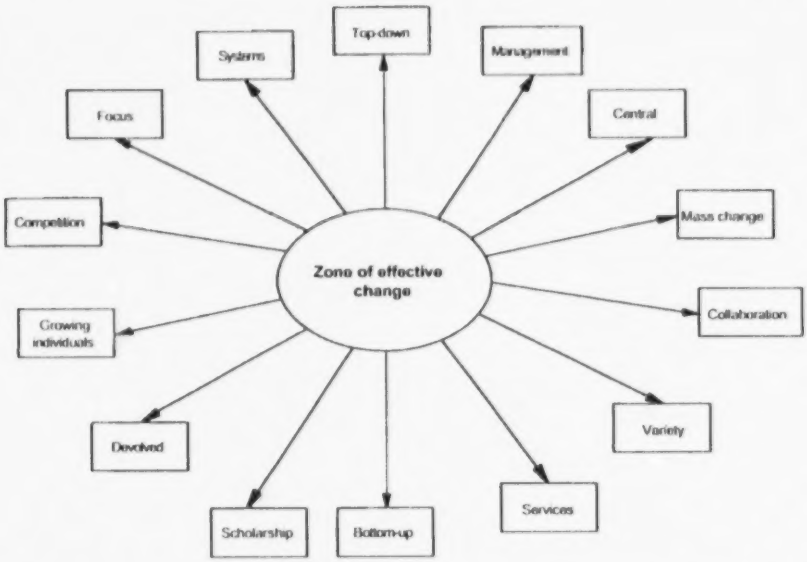


Figure 1: Effective change as the management of multiple dimensions or polarities

Top down vs Bottom up

Large scale 'social re-engineering' from the top can get a process going but it is too difficult to sustain unless genuine commitment develops locally. Over the past few years, RMIT University in Australia has made a substantial investment into the use of online learning technology, aimed at improving the quality of programs by reviewing their educational design and adding greater flexibility to modes of studying them. This initiative, called the IT Alignment Program (ITAP), has involved investment in infrastructure, enterprise computer-based systems which are IMS-compliant (http://www.imsproject.org/), Library resources, staff development, and program and course renewal (http://www.lts.rmit.edu.au/renewal/). RMIT has tried to move on several fronts at once, and many of the policies and processes that have been developed are still being refined (Kenny & McNaught, 2000). While the original vision for how technology might enhance the processes and procedures for the University came from the top (Fallshaw, 2000), the success of the implementation will be determined by the take-up in faculties and departments. Kenny (2001) explores this tension in the area of courseware development at RMIT. Based on several years experience of working with RMIT staff, he proposes a model to combine the benefits of project management for ensuring quality educational outcomes and a return on investment to the institution, with scholarship and ownership within the project teams to ensure individual commitment and satisfaction.

Management vs Scholarship

Bowden and Marton (1998) depict the 21st century university as the University of Learning. All aspects of university work—teaching, research and community involvement—are forms of learning for the individual, the collective scholars at a discipline level, and for the local (and increasingly global) society. All these types of learning involve growth and change, often in unpredictable directions. Yet, universities are large organizations and need to have some defined parameters. Willets (1996) has written a humorous article, entitled 'The best ways to survive reengineering. Expert tips on how to reinvent your attitude'. But there is a great deal of irony beneath his light advice. The sense of powerlessness that organizational change can often engender is very real. One strategy for universities is to keep the nature of the business which is scholarship at the forefront of management meetings. 'Will this process enhance scholarship?' is the question that must constantly be debated.

Systems vs Services

Quality assurance systems are a good way to illustrate this tension. Evidence must be scholarly, not just an audit trail. If information about the quality of academic work does not feed back into quality improvement, it is hard to justify the resources used to collect the information. Quality assurance systems must also provide service to the organisation. One example is the ISO9000 system (http://www.iso9000.org/). It has 125,000 registered and certified organizations who use, and pay for, its methodology. This may be fine for several types of businesses but universities need to question how applicable it is for higher education. "Despite more than a decade and three evolutions of ISO9000, the model has made little significant impact on higher education. This is not surprising because, despite tinkering with it, ISO9000 was never fundamentally designed for an educational context" (Harvey, 2001, p. 59).

Central vs Devolved

There are many tensions in the central/ devolved debate. One major issue is whether university funding for courseware design and production should be through central or faculty-based processes. Faculty staff want the skills and expertise that exists in central units, but wish to have it provided without reduction in funding to faculties. The requirement to pay for services from central units can set up resistances. Most universities use both approaches (McNaught, Phillips, Rossiter & Winn, 2000). It is finding the appropriate balance point that is the challenge. Tab. 1 summarises the arguments for and issues associated with each approach.

Centralised funding	**Devolved funding**
Points in favour of:	
Can reduce duplication of expensive services by funding a range of projects, the design ideas and products of which can be used in other faculties. Can foster cross-faculty collaboration and communication.	Can fund projects based on local knowledge of curricula and faculty culture. Can develop stable ongoing teams for future developments.
Can allow university strategic priorities to be enacted.	Can allow local ownership and commitment to grow.
Can foster the integration of outside funding with university priorities.	Can source funding from discipline and industry-related bodies.
Issues associated with:	
If the funding committee is not broadly constituted, this can result in a restricted range of models being favoured.	Traditional practices in the discipline can dominate, and it may be difficult for some innovative projects to be funded.
Can be dominated by a few strong university personalities; this may disadvantage certain faculties.	Can be dominated by a few strong faculty personalities; this may disadvantage certain departments/ schools.

Table 1: Pros and cons for centralised and devolved funding (McNaught et al., 2000, p. 113)

Focus vs Variety

Coordination is the key here. If administrative or academic support units have too many functions, their energy can be dissipated. If they have too narrow a focus, then the result may well be isolated units who do not see 'the big picture'. Clearly articulated functions and effective coordination between units is the answer.

An example of how diverse the range of services offered by university units is given in this list I made at a national meeting of 20 Directors of Staff Development of Australian universities in May 2001. Each of these items was supported by several of the universities present; minor or unusual services are not noted. This list refers to teaching and learning support. This list is *in addition to* the courseware production aspect of several units which are part of large flexible learning centres.

- Graduate Certificate in Higher Education programs;
- series of workshops and seminars across the university;
- academic induction programs;
- activities based at local faculty or department/ school level;
- student evaluation service;

- support for sessional staff, both onshore and offshore;
- post-graduate supervisor training;
- support for heads of departments/ schools linked to development of local policy;
- support for graduate capabilities, especially for programs leaders/ coordinators; and
- liaison with learning skills and library staff in course renewal teams.

So, academic staff development units are in danger of having too much variety. While some liaison with student support and library staff was noted, the focus of discussion remained on coping with the variety of internal activities, rather than on coordination with other units within each university.

Mass Change vs Growing Individuals

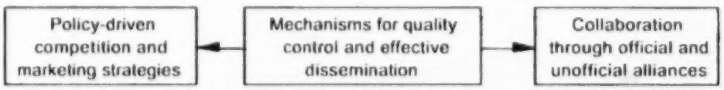
One example to illustrate how individual growth can dovetail with overall strategic directions is a recent academic staff development program run at RMIT University. A Learning Technology Mentor (LTM) program at RMIT ran from mid-1999 to the early part of 2001. The LTM program provided for 120+ academic staff to have one day per week time release over one semester, in order to:

- learn how to use the University's recently established online education system,
- design and implement online learning in their faculty's education programs, and
- promote and support similar activities among colleagues in their departments.

The aim of making a significant investment in learning technology mentoring by academic staff—rather than establishing a specialist online design and production unit to service them, for example—was to achieve widespread adoption of online learning as part of effecting a change in the culture of academic work. Extended time release of more than one semester was required to achieve useful outcomes in some cases; these academic staff were called Experienced Learning Technology Mentors (ELTMs). Over this time, in several faculties, a network of individuals developed that remained after the formal end of the program (McNaught, 2001; Gray & McNaught, 2001).

Competition vs Collaboration

There are benefits in both perspectives. Fig. 2 summarises the drivers for both collaboration and competition. If the aim is to produce high quality educational offerings there are drivers for both collaboration and competition relating to quality standards, financial viability and raised prestige.


Policy-driven competition and marketing strategies
Mechanisms for quality control and effective dissemination
Collaboration through official and unofficial alliances

Quality standards based on: student demand; industry needs	*Quality standards based on*: combined intellectual input; broader contextual experiences
Financial viability based on: developing potential for new markets for courses	*Financial viability based on*: efficiencies in resource terms; sharing of expenses
Raised prestige based on: creating a niche, a particular cultural identity in the marketplace	*Raised prestige based on*: pooled reputation of all partners; possible increased publication output

Figure 2: Summary of drivers for both competition and collaboration (after McNaught et al., 2000, p. 160)

Summary

One simple summary of polarity theory and its applicability to higher education today is the reframing of the set of dimensions I chose as follows:

- top down *and* bottom up decision making
- management *and* scholarship
- systems *and* services
- central *and* devolved
- focus *and* variety
- mass change *and* growing individuals
- competition *and* collaboration

Remove all oppositional 'versus' thinking and replace it with ways to consider how to gain maximum benefit by embracing both ends of poles. The zone of effective change can only be formed by the inclusion and balancing of both ends of each dimension.

References

Argyris, C. (1991). Teaching smart people to learn. *Harvard Business Review*, May/June, 199-209.

Argyris, C., & Schon, D. (1978). *Organisational learning: A theory of action perspective*. Reading, Mass.: Addison-Wesley.

Bowden, J., & Marton, F. (1998). The university of learning. Beyond quality and competence in higher education. London: Kogan Page.

Fallshaw, E. (2000). IT planning for strategic support: Aligning technology and vision. *Tertiary Education and Management, 6*, 193-207.

Ford, P., Goodyear, P., Heseltine, R., Lewis, R., Darby, J., Graves, J., Satorius, P., Harwood, D., & King, T. (1996). *Managing change in higher education*. Buckingham: SRHE & Open University Press.

Gray, K., & McNaught, C. (2001). Evaluation of achievements from collaboration in a learning technology mentoring program. In G. Kennedy, M. Keppell, C. McNaught & T. Petrovic (Eds) *Meeting at the crossroads*, (pp. 217-224). Proceedings of the 18th annual Australian Society for Computers in Learning in Tertiary Education 2001 conference, University of Melbourne, 9-12 December. [Online]. Available: http://www.ascilite.org.au/conferences/melbourne01/pdf/papers/grayk.pdf [30 April 2002].

Harvey, L. (2001). Quality in higher education. In *Management education for the 21st century: Managing in the digital age*, Conference proceedings, Management education section, (pp. 53-63). Swiss-AIT-Vietnam Management Development Programme & School of Industrial Management, HCMC University of Technology. Ho Ch Minh City, Vietnam, 11-14 September.

Johnson, B. (1992). *Polarity management: Identifying and managing unsolvable problems* Amherst Mass.: HRD Press.

Kenny, J. (2001). Where academia meets management: A model for the effective development of quality learning materials using new technologies. In G. Kennedy, M. Keppell, C. McNaught & T. Petrovic (Eds) *Meeting at the crossroads*, (pp. 327-334) Proceedings of the 18th annual Australian Society for Computers in Learning in Tertiary Education 2001 conference, University of Melbourne, 9-12 December. [Online]. Available: http://www.ascilite.org.au/conferences/melbourne01/pdf/papers/kennyj.pdf [30 April 2002].

Kenny, J., & McNaught, C. (2000). Promoting quality outcomes in higher education using new learning technologies: Processes and plans at RMIT. In R. Sims, M. O'Reilly & S. Sawkins (Eds) *Learning to choose. Choosing to learn*, (pp. 655-664). Proceedings of the 17th annual Australian Society for Computers in Learning in Tertiary Education 2000 conference, Southern Cross University, Coffs Harbour, 9-14 December. [Online]. Available: http://www.ascilite.org.au/conferences/coffs00/ [30 April 2002].

Marris, P. (1986). *Loss and change*, revised edition. London: Routledge & Kegan Paul.

McNaught, C. (2001). A model for staff development for using ICT in teaching and learning: The RMIT experience. *The power of 3*. Educause in Australasia 2001 conference. Gold Coast. 20-23 May. [Online]. Available: http://www.gu.edu.au/conference/educause2001/content2a.html [30 April 2002].

McNaught, C., Phillips, P., Rossiter, D., & Winn, J. (2000). *Developing a framework for a usable and useful inventory of computer-facilitated learning and support materials in Australian universities*. Evaluations and Investigations Program report 99/11. Canberra: Higher Education Division Department of Employment, Education, Training and Youth Affairs. [Online]. Available: http://www.detya.gov.au/highered/eippubs.htm#99_11 [30 April 2002].

Senge, P. (1990). *The fifth discipline: The art and practice of the learning organisation*. London: Random Century Group.

Willets, L. G. (1996). The best ways to survive reengineering. Expert tips on how to reinvent your attitude. Reengineering Resource Center. [Online]. Available: http://www.reengineering.com/articles/sept96/reengsurvival.htm [30 April 2002].

Yetton, P. and associates 1997. *Managing the Introduction of Technology in the Delivery and Administration of Higher Education*. Evaluations and Investigations Program report 97/3, Australian Government Publishing Service, Canberra. [Online]. Available: http://www.detya.gov.au/highered/eippubs1997.htm [30 April 2002].

BEST COPY AVAILABLE

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

NOTICE

Reproduction Basis

[X] This document is covered by a signed "Reproduction Release (Blanket)" form (on file within the ERIC system), encompassing all or classes of documents from its source organization and, therefore, does not require a "Specific Document" Release form.

[ ] This document is Federally-funded, or carries its own permission to reproduce, or is otherwise in the public domain and, therefore, may be reproduced by ERIC without a signed Reproduction Release form (either "Specific Document" or "Blanket").